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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,553	02/04/2002	Fumihiko Kobayashi	96790P197D2	5589

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EXAMINER

BROCK II, PAUL E

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/067,553

Applicant(s)

KOBAYASHI ET AL 

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12-18 is/are pending in the application.
- 4a) Of the above claim(s) 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 08/534,333.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Species 1, claims 12 – 16 in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 17 – 18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

### *Claim Objections*

3. Claim 16 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 13. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12 – 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6.

7. Claim 12 recites the limitations "the first step," "the second step," and "the third step" in lines three, five, and nine respectively. There is insufficient antecedent basis for this limitation in the claim. For purposes of this action "the first step," "the second step," and "the third step" will be considered --a first step--, --a second step--, and --a third step--.

8. With regard to claim 12, it is not clear in the claim limitation "wherein in the second step a distance between the wall of said semiconductor region and a side wall of said optical semiconductor element is larger in a portion in which a growth rate of the vapor phase epitaxy in a horizontal direction from the side wall of said optical semiconductor element and the wall of the semiconductor region is higher," it is not clear what the distance between the wall of the semiconductor region and a side wall of the optical semiconductor element larger than. Further, it is not clear what the growth rate is higher than. What is the distance larger than? What is the growth rate higher than?

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9. Claim 14 recites the limitation "the steps of forming trenches" in the third line of the claim. There is insufficient antecedent basis for this limitation in the claim. For purposes of this action, "the steps of forming trenches" will be considered --steps of forming trenches--.

10. Claim 14 recites the limitation "the step of forming electrodes" in the third line of the claim. There is insufficient antecedent basis for this limitation in the claim. For purposes of this action, "the step of forming electrodes" will be considered --a step of forming electrodes--.

11. With regard to claim 15, it is not clear in the claim limitation "wherein said trenches are wider in a portion in which a growth rate in a horizontal direction from the side walls of said trenches is higher," it is not clear what trenches are wider than. Further, it is not clear what the growth rate is higher than. What are the trenches wider than? What is the growth rate higher than?

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 12 – 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka (JPPAT 02022880).

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With regard to claim 12, Tanaka discloses in figures 2a – 2l a method of fabricating an optical semiconductor device. Tanaka discloses in figures 2a – 2b a first step of forming an optical semiconductor element (30) on a semiconductor substrate. Tanaka discloses in figures 2a – 2g a second step of forming a semiconductor region (to the right and left of 30) having walls opposing the optical semiconductor element and essentially surrounding the optical semiconductor element. Tanaka discloses in figures 2g – 2i and the constitution section of the English translation a third step of forming a buried layer (8) by vapor phase epitaxy (VPE) between the walls of the semiconductor region and the optical semiconductor element. Tanaka discloses in figures 2a – 2l wherein in the second step a distance between the wall of the semiconductor region and a side wall of the optical semiconductor element is larger in a portion in which a growth rate of the vapor phase epitaxy in a horizontal direction from the side wall of the optical semiconductor element and the wall of the semiconductor region is higher.

With regard to claims 13 and 16, Tanaka discloses in figures 2a – 2l and the constitution section wherein the buried layer is formed by vapor phase epitaxy (VPE) using a chloride-based source gas.

With regard to claim 14, Tanaka discloses in figures 2a – 2b, and figures 2g – 2h steps of forming trenches (6 and 7) in a predetermined region of the semiconductor region before the third step, the trenches being buried with the buried layer in the third step. Tanaka discloses in figures 2h – 2l a step of forming an electrode (10) to be connected to the optical semiconductor element on the trenches via an insulating film (27).

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With regard to claim 15, Tanaka discloses in figures 2f – 2h wherein the trenches are wider in a portion in which a growth rate in a horizontal direction from side walls of the trenches is higher.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sasaki et al., Mori et al., Shima et al., Toyoda et al., and Higuchi et al. all disclose epitaxial growth in trenches.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II

A handwritten signature in black ink, appearing to read 'Paul E Brock II', written in a cursive style.